On the evening of July 8th 2014 a line of fast moving severe thunderstorms impacted the North County with damaging winds and was the 5th most significant weather event for our region in 2014. This large convective complex contained numerous mini bow lines of storms, which formed along a cold front, which interacted with temperatures well into the 80s and dewpoint values near 70°F. The highest concentration of damaging winds occurred from the Saint Lawrence Valley in northern New York into parts of central and northern Vermont, including the Champlain Valley.

Figure 1 below shows a map of Local Storm Reports (LSRs) received by the National Weather Service (NWS) Burlington (BTV), Vermont Weather Forecast Office (WFO). The severe thunderstorm winds were estimated between 60 and 80 mph across many locations in the North Country during this event. The primary severe weather threat observed was damaging winds, which resulted in over 30,000 people losing power across Vermont and numerous trees down across the North Country from these bowing lines of storms.

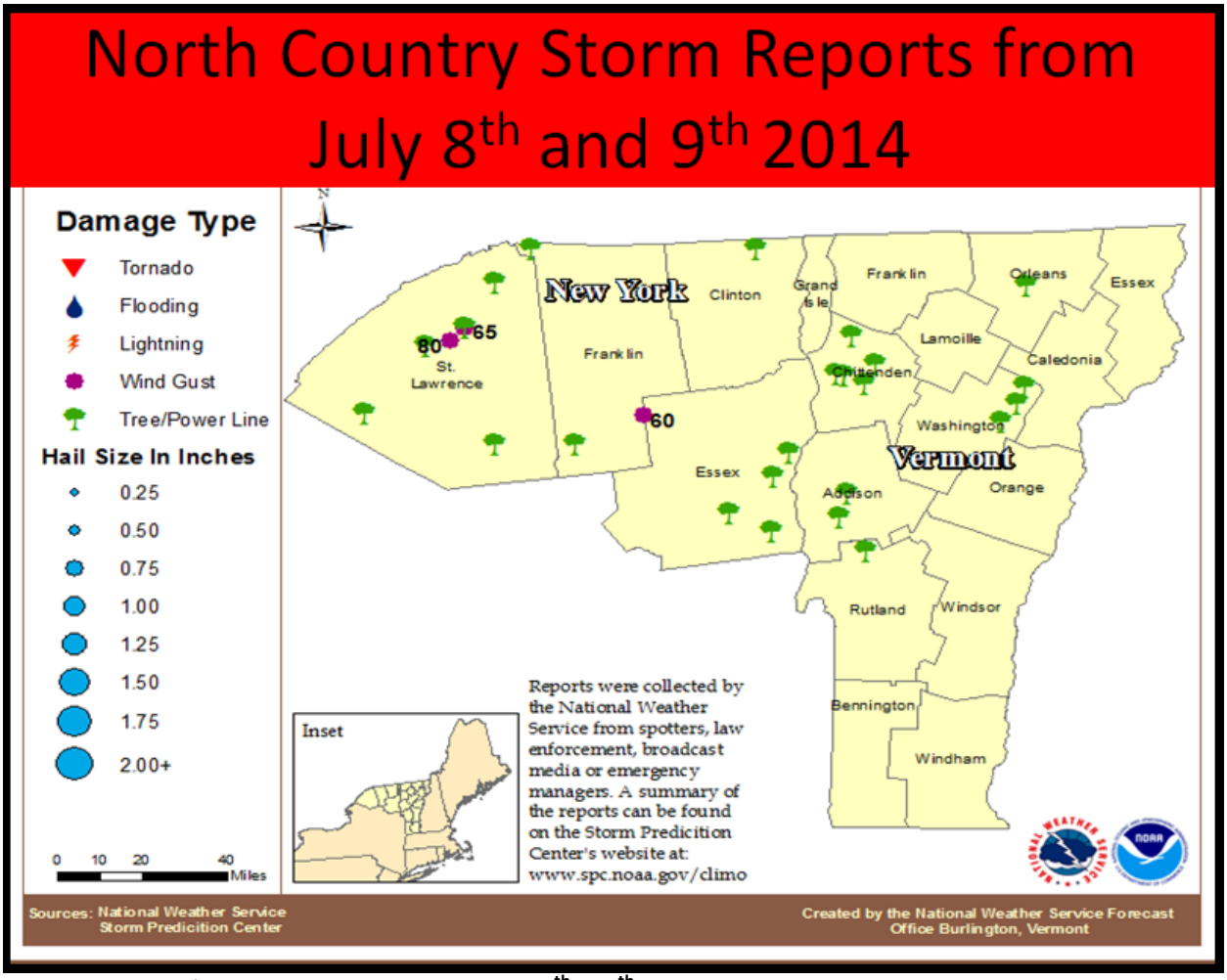

Figure 1: Map of Local Storm Reports on July 8th & 9th 2014. Green trees indicate trees or power lines down, light blue circles show location of large hail, and red dot is measured wind gust.

Figure 2 shows the 700 PM surface map and associated analysis on 8 July 2014. A well-defined cold front extended from a convectively induced meso surface low pressure across the Saint Lawrence Valley, while a weak warm front was lifting across northern New York and Vermont. This cold frontal boundary providing the necessary surface convergence and lift to produce multiple bowing line segments of severe thunderstorms across the North Country.

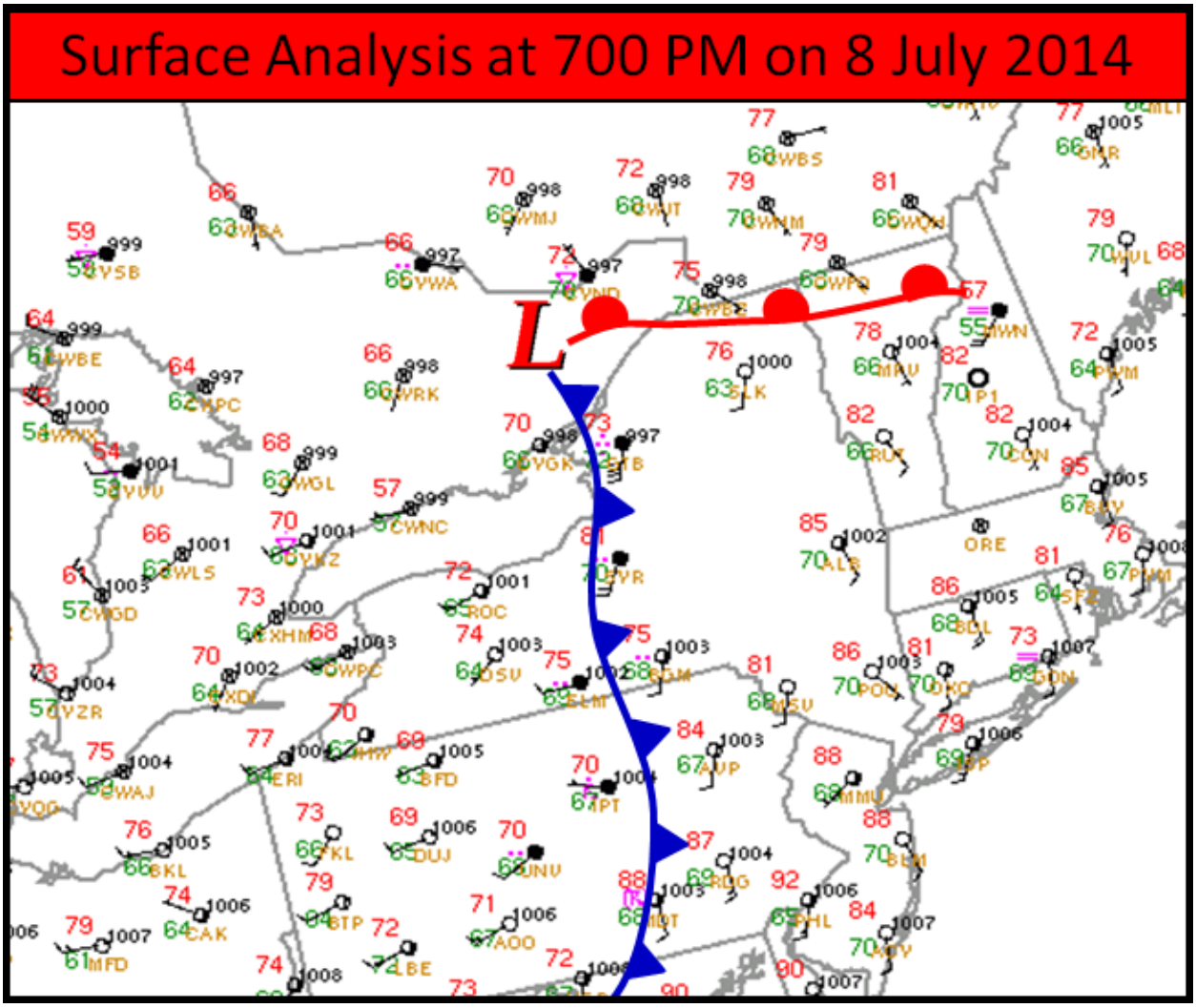

Figure 2: Surface map at 700 PM on 8 July 2014 with surface plots and cold front (blue line with triangles and warm front red line with half circles).

Figure 3 shows the evolution of multiple bow echoes within a large convective complex that impacts the region on July 8th. It should be noted ahead of the main line, several isolated supercells developed across parts of central New York and produced a deadly tornado near the Syracuse area. Given these are 1 hour snap shots of the line evolution and the associated comma head, the isolated supercells are hard to detect. In addition to favorable shear and instability parameters, the large-scale pattern included potent forcing for ascent, contributing to severe convective storms over a large area (Fig. 3).

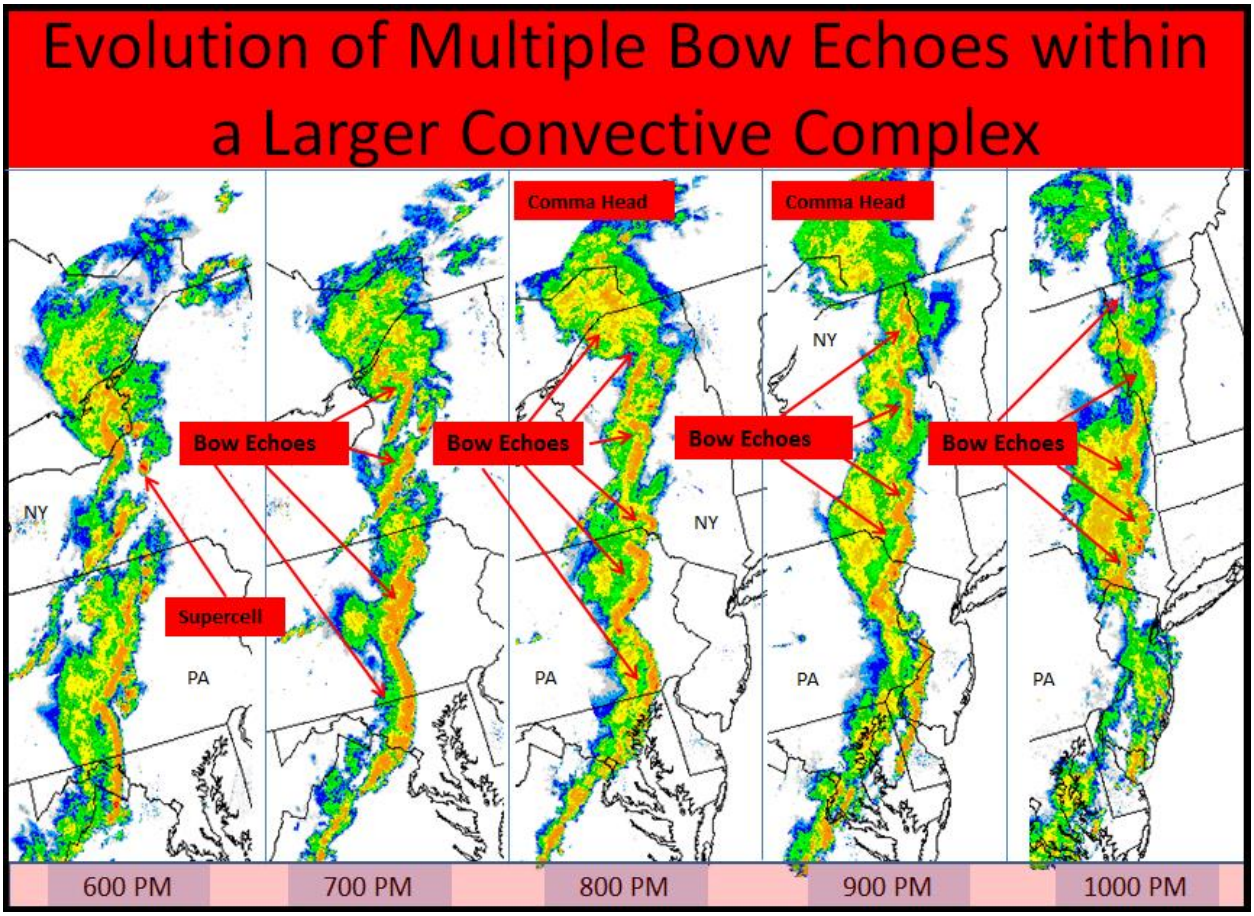

Figure 3: 0.5° Mosaic reflectivity across the Mid Atlantic to Northeast United States from 600 PM to 1000 PM on the evening of 08 July 2014.

Figure 4 below shows the KTYX 0.5° base reflectivity loop from 602 PM to 801 PM on 08 July 2014. This loop clearly shows a well-defined bow echo and associated comma head signature tracking northeast at 45 to 55 mph, from the Tug Hill Plateau to southern Saint Lawrence County. The decreasing reflectivity returns on the southwest flank of the storm, indicates an extremely strong rear inflow jet, which was verified by the KTYX VAD measuring 75 knots at 1000 feet above ground. As this broken line of storms moved quickly across northern New York and into Vermont, widespread damaging thunderstorm winds occurred.

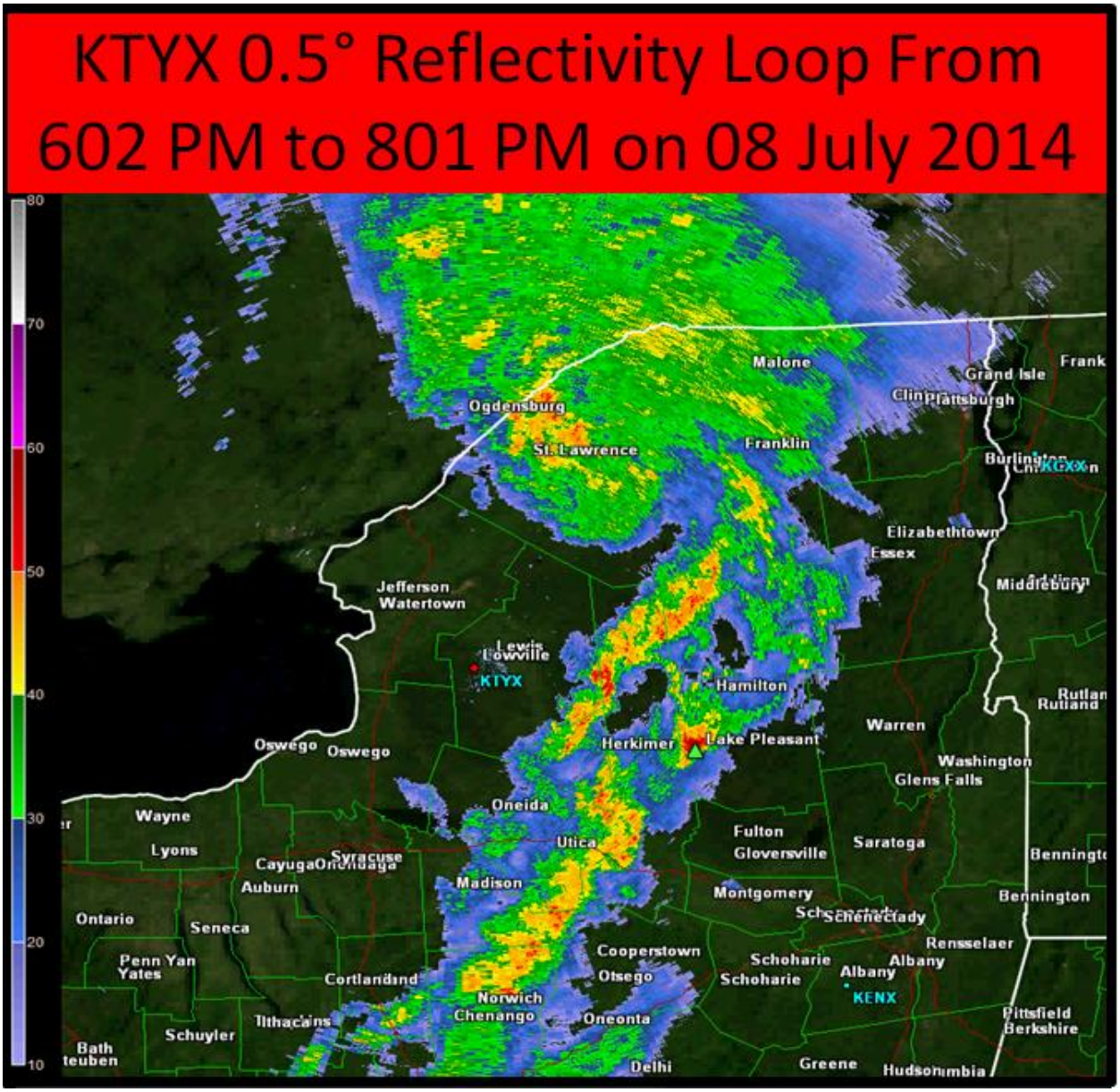

Figure 4: KTYX 0.5° base reflectivity loop from 602 PM to 801 PM on 08 July 2014.

This was the first widespread significant severe weather event of the 2014 season, which featured a long swath of damaging winds causing numerous communities across northern New York and Vermont to lose power. At the height of the storm, over 30,000 people were without power in Vermont and nearly 6,000 across extreme northern New York. This large, meso-convective system featured numerous embedded mini bow echoes. Figure 5 below show a mosaic of storm damage pictures across northern New York into Vermont.

Figure 5: Storm Damage Pictures from 8 July 2014.